Q&A from August 14, 2006 GNEP Industry Briefing

Deployment Approach

Q1: To support the "Global" in GNEP, will DOE require international participation?

A1: The Department is encouraging international participation but is leaving it to the responders to suggest what that entails for their particular proposed solutions.

Q2: Related to the schedule of this program, it is important to know the time of construction for choosing technologies applied. When does DOE expect to construct the CFTC and ABR? And, do you consider a possibility of preferential construction? We think that DOE should provide the time schedule for the two-track approach, including CFTC, ABR, AFCF and the commercial plant.

A2: While DOE anticipates that it would be possible to begin construction of the CFTC and ABR facilities as early as 2010, we are also requesting that the responders provide the Department with their own estimate, if possible, of the design, construction, and startup schedules associated with their proposed solutions.

Q3: The collocation concept of the ABR and the fuel cycle facility seems to be a possible option for you. Don't you have concerns that this would reduce cost-effectiveness due to limited capability of a collocated fuel cycle facility?

A3: DOE has not yet committed to the collocation option. The final site selection and facility inter-relationships (collocation or not) must collectively satisfy the GNEP objectives and address cost-effectiveness, environmental concerns, economic issues, and other relevant matters.

Consolidated Fuel Treatment Center

Q1: Most of the GNEP literature in the public domain has focused on aqueous based separation technology, especially UREX based separation processes. Are other technologies receiving equal consideration?

A1: The Department has not yet committed to a specific separations technology or solution. The Department continues to investigate Pyroprocessing and is aware of other reprocessing technologies. The responder should specify what technology it proposes to use in its submittal.

Q2: What is the CFTC?

(1) Does CFTC mean ESD (+fuel fabrication), which is described in the "Spent Nuclear Fuel Recycling Program Plan" May 2006, not commercial plant (Integrated recycling Plant)? (CFTC=ESD?)

(2) If CFTC means ESD (+fuel fabrication), why did DOE change the name of ESD to CFTC?

A2: The CFTC is essentially a larger scale ESD. The use of the term "CFTC" reflects the inclusion of fuel fabrication for the ABR's initial driver fuel.

Q3: If DOE intends to work with a mixture of uranium and plutonium, how much uranium is it planning to mix with the plutonium? Is the intent to always keep the uranium together with the plutonium so that there will never be a stream of pure plutonium? Does the US Government consider the uranium-plutonium mix either proliferation-proof or proliferation-resistant? Would then the uranium be re-used in fuel rather than stored as low-level waste?

A3: DOE has asked the responders to describe how they would handle fuel separation, including the technologies to be used. The requested information is in the purview of the responders to provide. The Government's policy continues to be to promote technologies that do not produce pure Pu streams. It is an objective of GNEP to recycle spent fuel; hence, to the extent possible, recovered uranium would be fabricated into fuel.

Q4: Which are the principal fission products of concern to the DOE with regard to "high radio toxicity for long term disposal?"

A4: The principal fission products of concern are technetium-99 and iodine-129. These isotopes are the major fission product contributors to long-term dose in the Yucca Mountain geologic repository environment.

Q5: Will facilities be required-or may they be required-to serve as interim storage sites for SNF?

A5: The CFTC and ABR facilities will not include interim storage sites for spent fuel that is intended for disposal in the Yucca Mountain repository as spent fuel. Rather, as stated in the EOIs, we expect them to have sufficient space to store and manage sufficient SNF to support the annual operation of the facilities. This interim process storage capability will actually be the first step in operations at the CFTC. One year's worth of capacity was selected as an approximate size to buffer expected fluctuations in SNF supply that could be caused by transportation problems, bad weather, failed equipment, labor strikes, or any of the many frequently encountered delivery challenges that other processing and manufacturing facilities are usually faced with.

Advanced Burner Reactor

Q1: Has it been decided that the ABR will most probably be a sodium cooled design or is it going to be a consideration of other designs too with a subsequent down-selection?

A1: The Department believes that sodium cooled fast reactors are the most mature technology. The Department, however, has not yet committed to a specific reactor type for implementation in GNEP. Responders should specify the reactor type they propose.

Q2: Where is the computational support to be located to support R&D for a fast reactor for which the fuels and coolants are to be determined? Computational support includes a simulator that models the operation of a conceptual fast ABR and models fuels?

A2: Responders should specify the R&D needs of their proposed solutions. DOE will address this question after more fully characterizing the R&D requirements of the ABR and CFTC.

Q3: Please specify the fuels in detail that are the conventional fast fuels suitable for production from SNF for the new ABR.

A3: Responders should identify the fuels that are suitable for their proposed reactor system. As used in the EOIs, conventional refers to the fuel that would be utilized in the ABR prior to developing and converting over to transmutation fuel. DOE anticipates that conventional fuel would not be fabricated from LWR SNF.

Q4: Can electrical power produced by ABR's surplus heat be used to power devices to "treat" the fission products from SNF with gamma radiation to reduce the decay periods of components of the SNF instead of sending the power out to the grid?

A4: The Department is interested in all potential uses of the produced energy and anticipates that the responders will describe how that energy could be used.

Q5: Will a less than 500MWth ABR EOI be considered?

A5: As specified in the ABR EOI example characteristics, the anticipated range of thermal power is 500 – 2000 MW, which the Department provided to guide responders. GNEP's objective is to deploy reasonably quickly a commercial scale system, so any responses should be consistent with that objective. A lower power reactor would not necessarily be disregarded as long as the responder demonstrated that it would satisfactorily support the GNEP objectives.

Q6: What is the status of FFTF? Can it be re-operated at this point?

A6: The EOIs request a prototypic commercial-scale ABR. Although FFTF is in the process of being decommissioned, responders are free to propose a solution that utilizes FFTF in that capacity and satisfies the needs of GNEP.

EOI Preparation

Q1: We assume that DOE anticipates receiving very comprehensive, strategic information on a proposed path forward for ABR and CFTC in the expression of interest document. Given the sensitive information that we will provide in our EOI, would the Government please add language protecting the information received from parties submitting an EOI?

A1: The Requests for Expressions of Interest already contain sufficient coverage on this issue. Specifically, they state:

> "Confidential or business sensitive information contained in the submission must be identified and marked accordingly. DOE will protect this information from public disclosure to the extent permitted by law."

Q2: It is envisioned that the National Laboratories will be extensively involved in ABR design refinements and the CFTC design development. Assuming that industry will take the lead as prime contractor for the envisioned commercial deployments, what model will be used to ensure the laboratory activities are focused and support commercial deployment?

A2: The responders should suggest what they believe to be an appropriate government-industry relationship and the extent and type of participation of each sector. Responders should suggest business models they believe to be appropriate in developing their proposed solutions.

Q3: What would be the most likely financing model for construction of the CFTC and ABR commercial demonstration projects?

A3: The Department expects the responders to identify the funding models they believe to be appropriate to support their proposals.

Q4: What role for Non-Governmental Organizations (NGOs) does DOE envision in the context of this initiative and in the context of soliciting support for the reprocessing and fast reactor facilities?

A4: The Department has requested that EOI responders describe their potential partners and roles that those partners would play. If responders believe that NGOs should participate in their proposals then the role of NGOs should be described.

Q5: A requirement of this EOI is that the CFTC "shall be capable of being licensed by the US NRC." Do you intend that CFTC be licensed by NRC from the outset, i.e., from construction through initial operations, or will it initially be regulated by DOE and transition at a future time to NRC regulation. If it is the latter, when will the transition occur and under what conditions?

A5: With a few exceptions, the Department regulates facilities operated by it or its contractors and is not subject to NRC licensing. Whether the CFTC would be licensed by NRC would depend on the details of a particular proposal relating to whether it would be considered a facility operated by or on behalf of DOE. Since an objective of GNEP is to promote commercialization of advanced technologies, the EOIs requested CFTC and ABR proposals that would comply with all applicable NRC regulations in order to facilitate licensing of such facilities when they are commercially deployed.

Q6: Would it be a good idea to propose financing mechanisms in the EOI?

A6: DOE encourages responders to offer as much information as possible regarding their proposed approach, its implementation, the working relationship with DOE, funding and potential finance mechanisms, and other aspects of their proposed solution, as possible.

Q7: Is a Managing and Operating contractor eligible to submit an EOI (even if they manage a National Lab)? An additional similar question was, "Could you discuss how other DOE laboratories can support INL's GNEP work and be available to participate in other GNEP funding opportunities activities?"

A7: No entity is precluded from submitting an EOI. However, because of the restrictions on Federally Funded Research and Development Centers imposed by the Federal Acquisition Regulation, we are carefully considering how the national laboratories will be able to participate in GNEP work. We recognize and appreciate that the national laboratories may have specialized expertise and have an interest in contributing to the development of the GNEP concept, and we are open to considering approaches for laboratory involvement in the GNEP effort, to the extent consistent with existing contracts and applicable laws and regulations. We are interested in hearing your ideas and suggestions in that regard.

Q8: Site criteria includes: 1)5 mile proximity to highway supporting 80,000 GVW, 2)13 kV line within 10 miles of site. Galena, Alaska uses Yukon River for 80,000GVW type of transportation. No major highway within 200 miles of Galena. Galena has less than 13kV line (about 4kV I believe). Are the Highway & 13kV criteria absolute or would alternatives as listed above be acceptable?

A8: This appears to be a question related to the FOA, not the EOI. However, regarding the EOIs, the Department is interested in proposed approaches that will accomplish the objectives of GNEP as stated in the EOIs and further explained on the GNEP website, http://gnep.energy.gov. The Department encourages potential responders to submit their proposals if they can

convincingly demonstrate that they support the GNEP objectives even when some aspects may not technically meet the criteria.

Acronyms

ABR	Advanced Burner Reactor
CFTC	Consolidated Fuel Treatment Center
DOE	United States Department of Energy
EOI	Expression of Interest
ESD	Engineering-scale Demonstration
FFTF	Fast Flux Test Facility
FOA	Funding Opportunity Announcement
GNEP	Global Nuclear Energy Partnership
LWR	Light Water Reactor
NGO	Non-government Organization
NRC	United States Nuclear Regulatory Commission
SNF	Spent Nuclear Fuel
UREX	Uranium Extraction